Audiovisual Services

Academic Year: (2019 / 2020) **Review date: 26/04/2019 11:19:36**

Department assigned to the subject: Telematic Engineering Department

Coordinating teacher: VIDAL FERNANDEZ, IVAN

Type: Compulsory ECTS Credits : 6.0

Year : 4 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Communications Networks and Services (Bachelor in Telematics Engineering, 2nd course, 2nd semester).

OBJECTIVES

With respect to knowledge, at the end of the course the student will be able to:
- Know the different signaling architectures of voice services, in both circuit-switched networks (SS7 Signaling System) and packets networks (H.323 and SIP).
- Know the different architectures of IP video telephony (SIP and H.323), Video on demand (VoD) and existing IPTV.
- Know scalable implementation alternatives.
- Know the limitations and alternatives for transporting real-time multimedia streams over packet networks.
- Know the multicast service and the main multicast routing algorithms.
- Know the quality of service facilities in various network technologies.
- Know multimedia transport protocols over packet networks, such as RTP.

In terms of competences, they can be classified into two groups: specific competences and generic competences or skills.

With regards to specific competences, after the course students will be able to:
- Analyze and compare different design alternatives of multimedia services.
- Configure various QoS parameters in a network to support a telephony system.
- Identify and solve multicast distribution issues.
- Create services with group support.
- Use of transport protocols for applications or networks with special characteristics.

With respect to general competences or skills, the course will focus on:
- Broad view on the various protocols in multimedia networks judiciously applying the knowledge gained.
- Ability to function on disciplinary teams to solve the raised work, distributing the workload to deal with complex problems (PO d).
- Recognition of the need for continuous learning and ability to access and understand technical literature (PO i).
- Contact with technologies widely used in the networks of telecommunications operators and of distribution of multimedia content (PO j).
- Ability to design systems and content distribution networks, as well as to design multi-network multimedia applications (PO a, e).

In terms of attitudes, after completing the course students should have:
- Proactive with respect to collaborating with colleagues, to complete complex tasks as a group.
- Proactive about the need to understand the technologies considered prior to their configuration.

DESCRIPTION OF CONTENTS: PROGRAMME

This course covers multimedia networking protocols, where basic techniques are studied to design, configure and operate networks and multimedia services.

The program is divided into five parts:

PART 1: Audiovisual services and distributed multimedia applications, Network requirements and protocol architectures.
PART 2. Multicast routing service. Case study: IP television in telecommunication operator networks.
PART 3. Multimedia transport protocols over packet networks
PART 4. Services based on multimedia streaming. Case studies: video-on-demand services in the Internet.
PART 5. Signaling of multimedia services over packet networks. IP telephony services.

LEARNING ACTIVITIES AND METHODOLOGY

The teaching methodology will include:
1. Theoretical lectures, which will include the main knowledge that students must acquire. Discussions and resolution of doubts about the concepts acquired by the student in the self-learning process. To facilitate its development students will have basic reference texts, enabling them to delve into the various topics covered by the course (PO: i, j).
2. Laboratory classes, where students will cooperate in working groups of two or more persons to engage in practices designed to apply, consolidate and deepen into the various theoretical knowledge thought during lecture sessions (PO: a, d, j).
3. Resolution of exercises by the student that will serve to assess their knowledge and acquire the necessary competences.
4. Classes of practical exercises, to address a joint correction of the proposed exercises, which should serve to consolidate knowledge and develop the ability to analyze and communicate the relevant information to solve problems (together, items 3 and 4 correspond to the PO: a, e, i).

ASSESSMENT SYSTEM

% end-of-term-examination/test:	0
% of continuous assessment (assigments, laboratory, practicals…):	100

100% is continuous assessment. The note of the continuous assessment will consist of four blocks:

- Knowledge tests: 75 points.
- Laboratory exercises: 10 points.
- Practical study case: 15 points.
- Deliverables (questions, theoretical and practical study cases, specific work assigned by teachers): they are considered in the case of limits between grades.

To pass the course the student must obtain at least 50 points as the sum of all the blocks (without requiring a minimum mark in any of the blocks).

According to the continuous assessment rules specified by the University, in the ordinary term students that have not followed the continuous assessment will be allowed to do a final examen with a value of 60% of the grade of the subject. In the extraordinary term, the student will have the right to be evaluated with a final exam with a value of 100% of the grade of the subject.

BASIC BIBLIOGRAPHY

- Iván Vidal, Ignacio Soto, Albert Banchs, Jaime Garcia-Reinoso, Ivan Lozano, Gonzalo Camarillo. Multimedia networking: Technologies, protocols, and architectures. , Artech House. ISBN 9781630813789, 2019

ADDITIONAL BIBLIOGRAPHY

- Alan B. Johnston. SIP: Understanding the Session Initiation Protocol, Third Edition., Artech house. ISBN 9781607839958., 2009

- Daniel Minoli. IP multicast with applications to IPTV and mobile DVB-H., Wiley. ISBN: 9780470258156., 2008.

- James F. Kurose and Keith W. Ross. Computer Networking. A Top-Down Approach. Septima edición., Pearson. ISBN 9781292153599, 2017